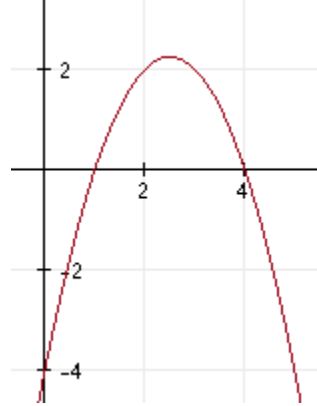# What is the Quadratic Formula of This?

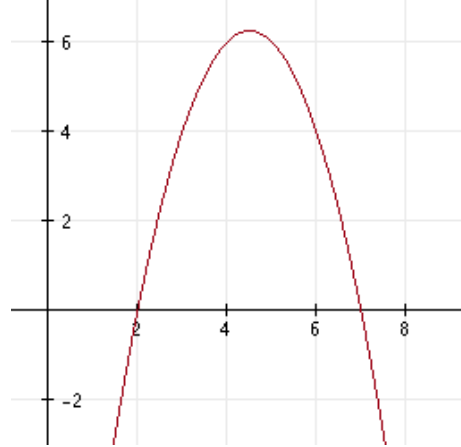Name _____   Alg _____

Directions: Use the roots of the parabola to discover the factors of its equation. Multiply the factors to create the quadratic formulas. Use this format: $y = ax^2 + bx + c$. Be sure to change the signs of all coefficients so that the a-coefficient is negative. A parabola that frowns is negative. Circle your answers.
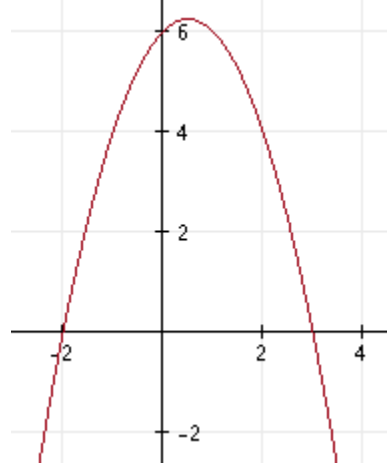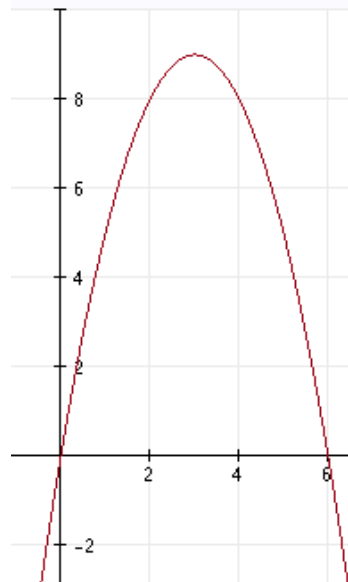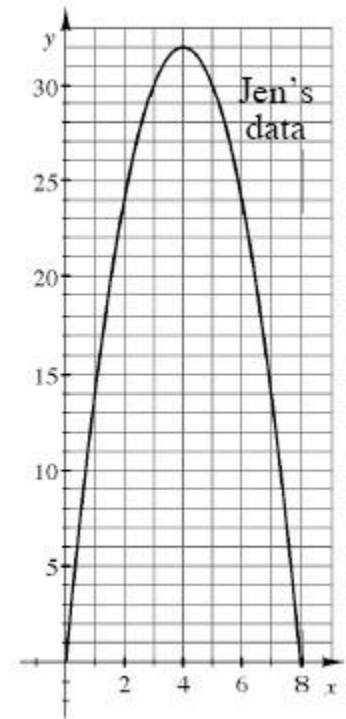
1)

2)

3)

4)

What is the Quadratic Formula of This?

5) Jen lobbed a water balloon and its path was recorded in this graph. What quadratic equation models the motion of the balloon? Circle your answer.

Extra Credit: Create your own parabola and determine its quadratic equation:

1) Get graph paper.

2) Model the trajectory of a thrown object (football, water balloon, basketball, water rocket).

3) Calculate its quadratic equation. Will the a-coefficient be positive or negative?

4) Carefully draw the parabola. Label the roots, vertex, and y-intercept on the graph. Write the coordinate points: *(x, y)*

5) Prove that your quadratic equation works calculating the y for a corresponding x.

6) Prove that you quadratic equation works for another value of x.

Hints: If a root is positive, then its expression will have negative sign inside: (x -5). If a root is negative, then its expression will have a positive sign inside: (x+5). Remember to set the product of factors equal zero according to the Zero Product Property. After you have foiled the expressions and written the equation in standard quadratic form, change the signs of each coefficient so that your final equation is correct. You should notice that your y-intercept of the graph matches the equation.